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SUBIC BAY FLEET MOORINGS INSPECTION REPORT

INVENTORY

FPO-1-82(23)

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SUBIC BAY FLEET MOORINGS INSPECTION REPORT

30 SEPTEMBER 1982

OCEAN ENGINEERING AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, DC 20374

FPO-1-82(23)

TABLE OF CONTENTS

ABSTRACT

This report contains the results of the underwater inspection of 20 Fleet Moorings located at Subic Bay, R. P. The inspections were conducted by an engineer from CHESNAVFACENGCOM supported by divers from UCT-2 during the period 1 - 20 June 1982.

Results of the inspection indicate that eight of the 20 moorings inspected are in satisfactory condition, eight moorings do not meet design classification criteria and should be downgraded, and four moorings do not meet minimum safety requirements and should be removed from service until an overhaul is accomplished.

SUBIC BAY FLEET MOORINGS
UNDERWATER INSPECTION REPORT

1.0 INTRODUCTION

1.1 **Background.** Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan and conduct periodic diver inspections of all fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-In-Charge to provide inspection planning and on-site technical direction for the underwater inspection of fleet moorings at Subic Bay, R.P. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT-2). A total of 20 fleet moorings were inspected: two A-Riser, one B-Riser, two B-Telephone, and 15 D-Riser type. CHESNAVFACENGCOM has evaluated the inspection data gathered by the EIC and UCT-2 divers. These data served as the basis for this inspection report.

1.2 **Mooring Historical Data.** The underwater inspection of these moorings was conducted during the period 1-20 June 1982. Upon arrival at Subic Bay, meetings were held with personnel of the NAVSTA, PWC, and CBMU-302. Through these meetings, mooring data was obtained and the planned inspection procedures were reviewed with all concerned. PWC Subic provided extensive historical, maintenance, and usage data for all moorings. Included in this data were as-built drawings of the moorings and an inventory of mooring material on hand. Mooring locations are shown in Figure 1. Each of the moorings consisted of either a peg top, drum, or telephone type buoy. Riser type moorings consist of a riser chain connecting the buoy to a ground ring, which in turn is attached to multiple ground legs (Figure 2). Telephone type moorings have multiple legs running directly from the buoy to their respective anchors (Figure 3).

2.0 INSPECTION PROCEDURES

2.1 **Procedures.** The purpose of mooring inspections is to determine the general physical condition of the buoys and chain assemblies and, when possible, to verify or update existing as-built and maintenance records. Underwater inspections performed by divers sample only a portion of the submerged buoy hull and chain assemblies in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this "selective sampling" inspection provides a good indication of the installation's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expeditious and relatively inexpensive supplement to accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving recovery of the mooring and the measurement and evaluation of each component.

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Results of the inspection indicate that eight of the 20 moorings inspected are in satisfactory condition, eight moorings do not meet design classification criteria and should be downgraded, and four moorings do not meet minimum safety requirements and should be removed from service until an overhaul is accomplished.

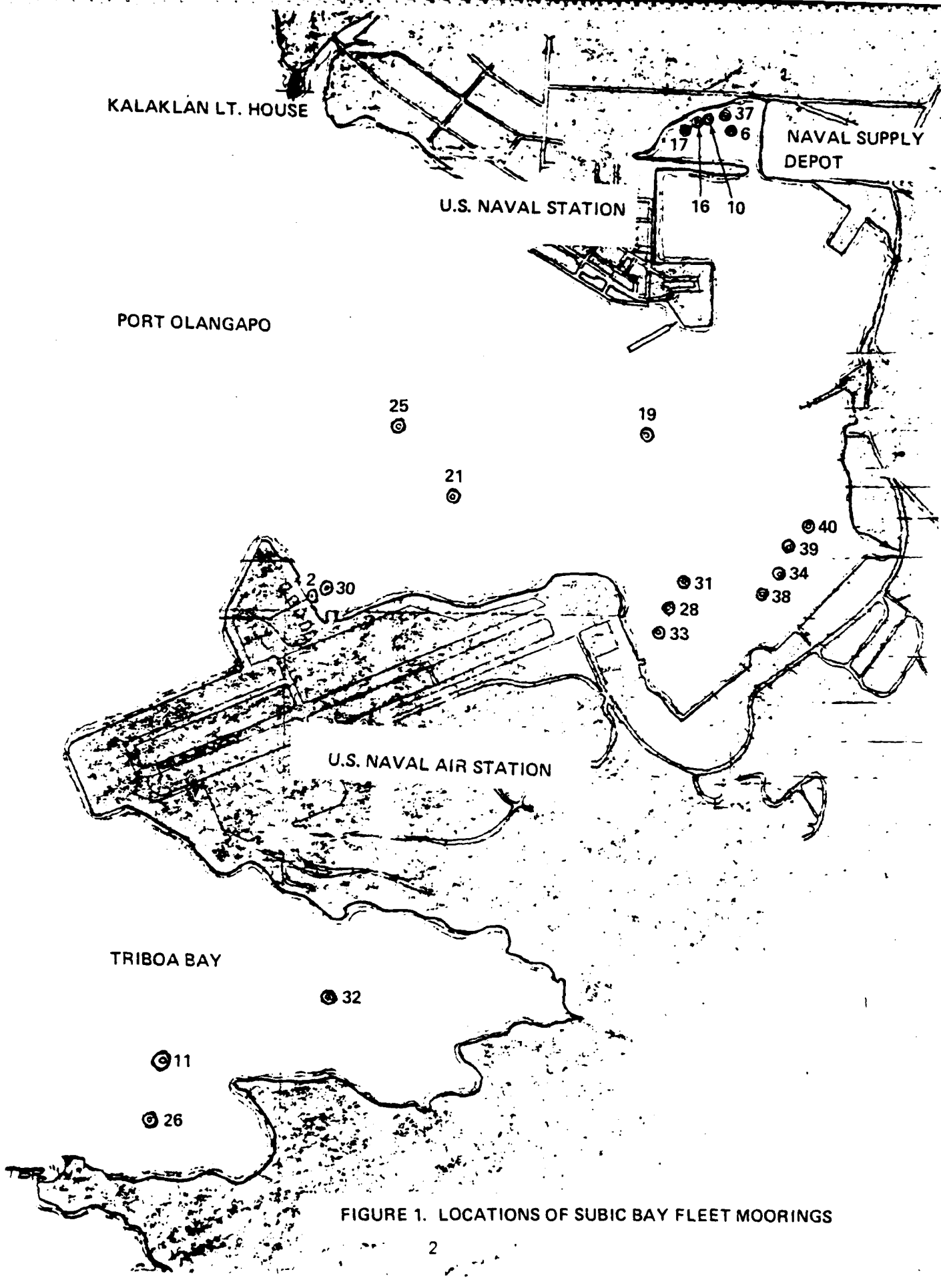


FIGURE 1. LOCATIONS OF SUBIC BAY FLEET MOORINGS

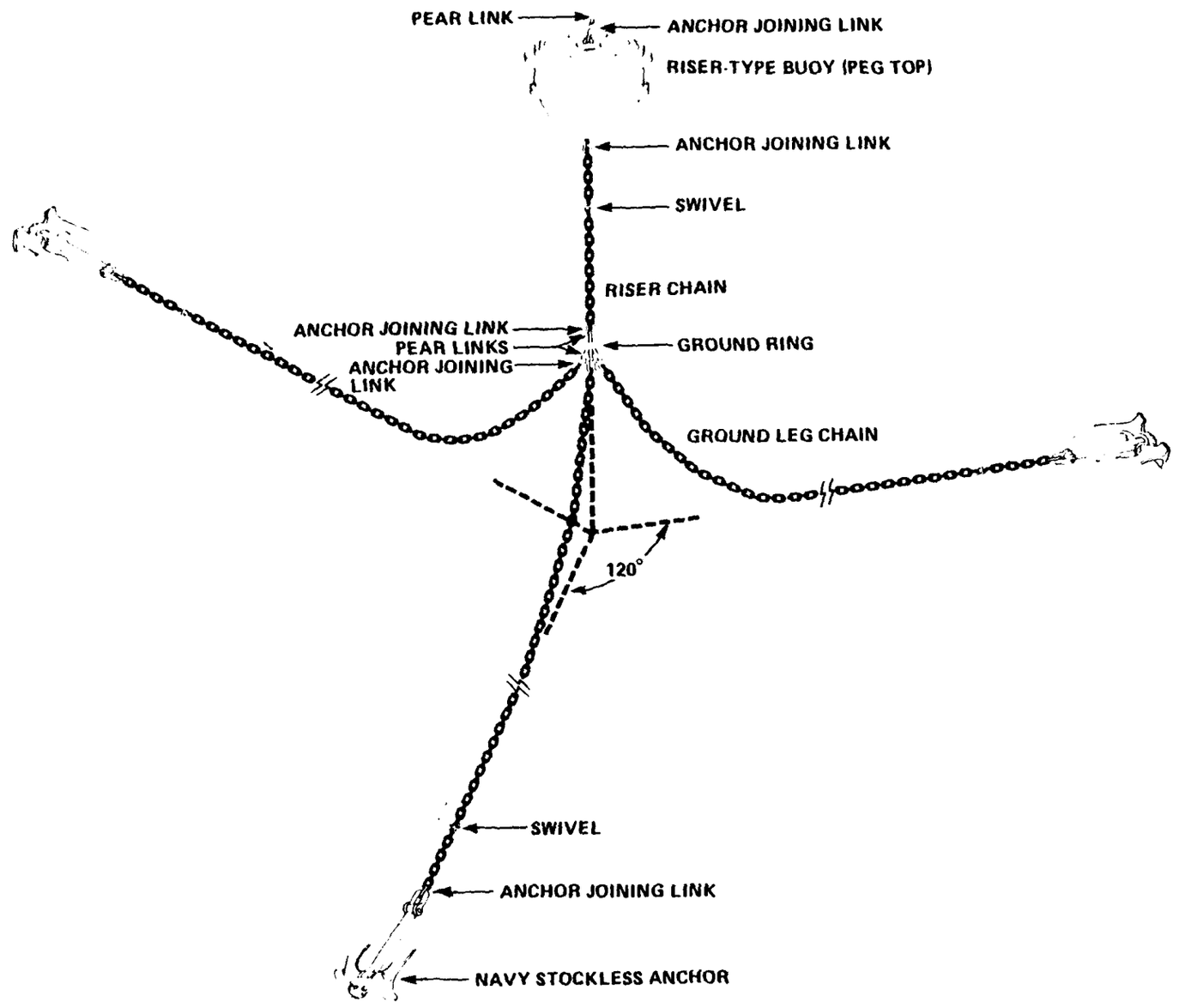


FIGURE 2. TYPICAL RISER-TYPE MOORING

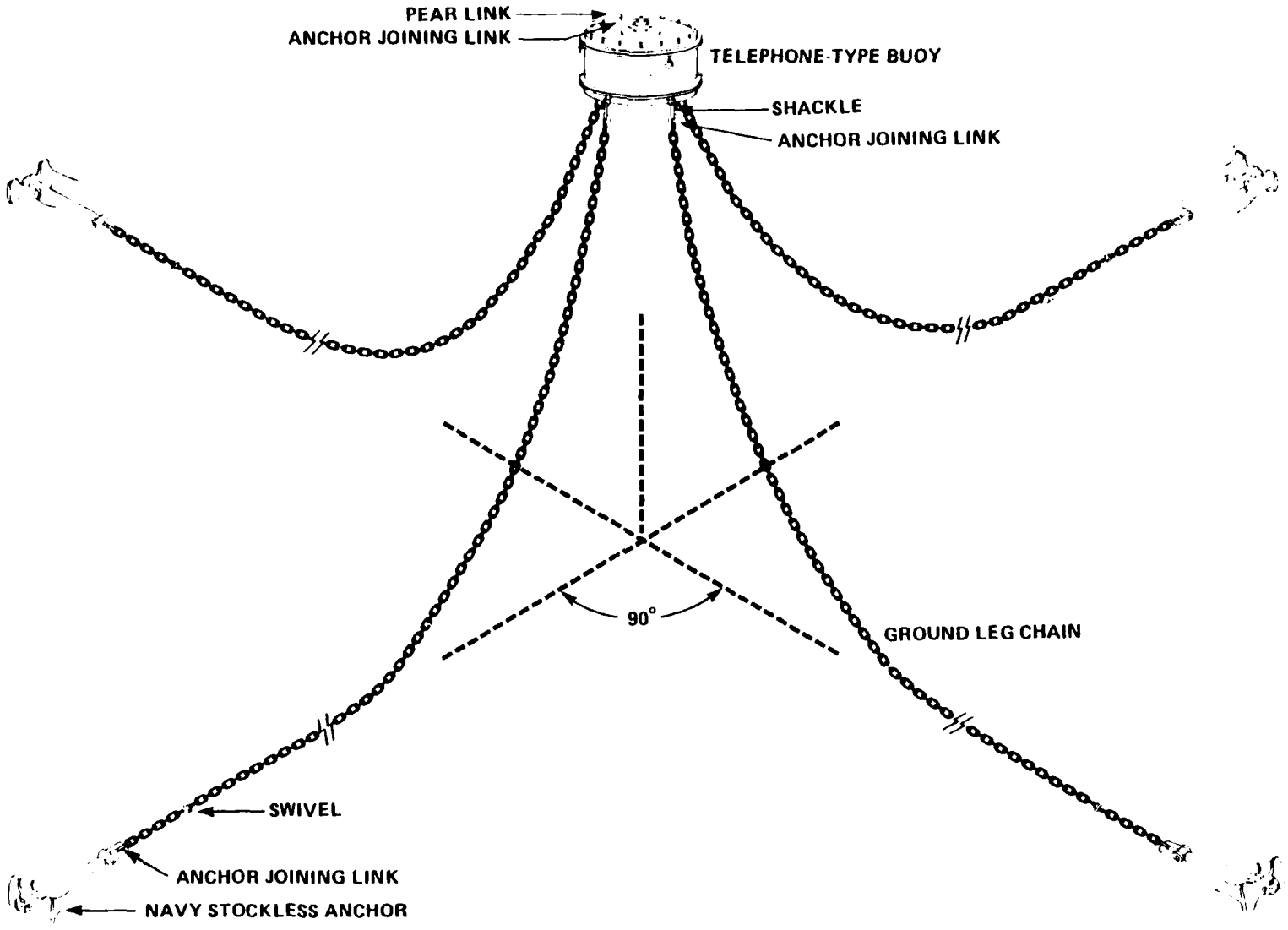


FIGURE 3. TYPICAL TELEPHONE-TYPE MOORING

One of the more important parameters used to evaluate the condition of a mooring is chain wire diameter. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware is taken in order to determine the amount of deterioration due to corrosion and wear. "Single Link" measurements are taken where chain is slack, and detect only corrosion loss. "Double Link" measurements, taken where two links connect under tension, detect the combined effects of corrosion and wear. Figure 4 shows how these measurements are made. Chain links and other components which measure greater than 90% (+90%) of original wire diameter are considered in "good" condition; measurement between 80% and 90% of original diameter is considered "fair" condition and is cause for the mooring classification to be downgraded; any measurement less than 80% is considered "poor" and is cause for the mooring to be declared unsatisfactory for fleet use.

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried. Ground legs and risers are observed only to the point at which they become buried; no attempt is made to locate and inspect anchors or other mooring materials which are not readily visible.

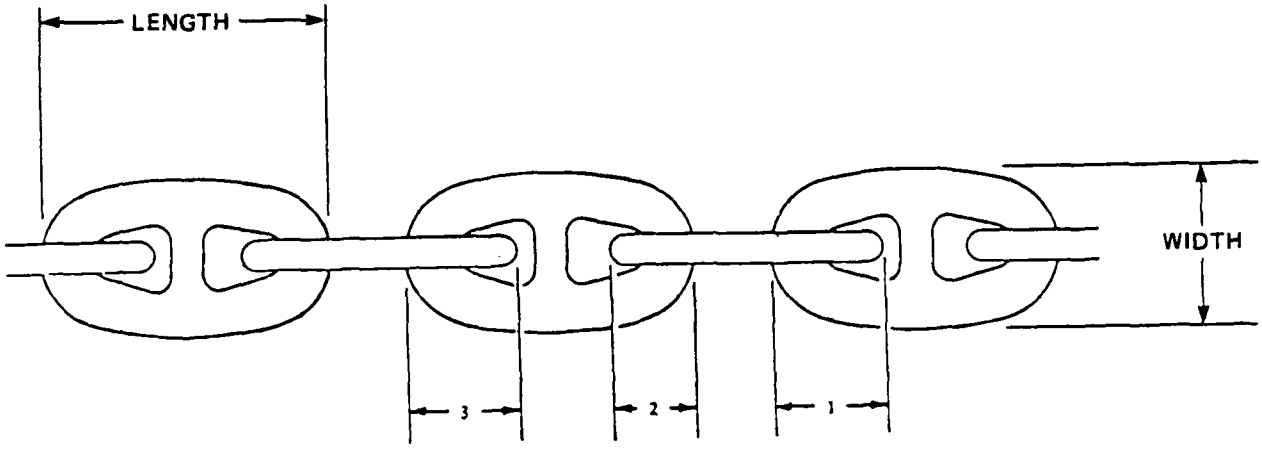
2.1.1 Buoy

2.1.1.1 Buoy Topside. The buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. Physical damage such as holes, dents, or listing were recorded. Fiberglass coated buoys were inspected for cracks, wear, or peeling. For those buoys that were not fiberglassed, the paint was checked for cracking, chipping and peeling. Hatches, openings and penetrations were examined and broken parts and rust were reported.

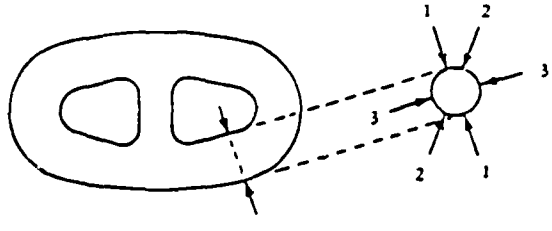
The buoy fenders and rubbing rails were checked for integrity and sound connection to the buoy.

Buoy top chain jewelry was described and measured with calipers to find the overall outside dimensions and regions of most severe reduction in wire size.

2.1.1.2 Buoy Lower Portions. Divers inspected the buoy below the waterline. The thickness of marine growth was recorded. Three, one foot square areas were selected and cleared of growth (without damaging the paint or fiberglass), and the condition of the paint or fiberglass was noted. If the buoy was a riser type with a hawse pipe, the presence and condition of the rubbing casting were recorded.



Double Link Measurement



Single Link Measurement

FIGURE 4. LOCATIONS FOR TAKING CHAIN LINK MEASUREMENTS

2.1.2 Bottom Jewelry. On all moorings, the bottom chain jewelry connecting the buoy to the riser (or to the ground legs in the telephone moorings) was identified and measured with calipers. Again, as for the top chain jewelry, the overall dimensions and the smallest wire size were recorded.

2.1.3 Riser. Each 90 foot shot was measured by taking three consecutive double link measurements, using pre-cut gauges, at both ends and near the center of each riser. In addition, the riser chain and swivel were visually inspected by the divers for excessive wear and physical or mechanical damage.

2.1.4 Ground Ring (Riser Type Only). The ground ring was examined for general and localized wear. Caliper measurements were made of the wire size in the region of the most severe wear and across the inner diameter.

2.1.5 Ground Legs. Double link measurements were also taken at both ends and in the middle of each shot of chain in each ground leg. In those cases where the ground leg chain was resting on the bottom and not in tension, single link measurements were substituted for double link measurements. Detachable links and swivels were identified, visually inspected, and measured as required.

2.1.6 Anchors. The hardware connecting the anchor to its ground leg was measured by calipers in the same manner as the bottom jewelry.

2.1.7 Photography

2.1.7.1 Topside. The EIC was responsible for topside photography and ashore photographs.

Photographs were taken of all buoys showing general conditions. Photographs of the topside jewelry and damaged buoy components were taken as deemed appropriate by the EIC.

Photographs were taken of construction equipment and spare mooring material ashore as deemed necessary.

2.1.7.2 Underwater Photography. Underwater photography was the responsibility of UCT-2 personnel. Buoy bottoms, anodes, bottom jewelry, worn links, swivels, ground rings, and other hardware were photographed whenever required to support material conditions and when environmentally feasible.

3.0 INSPECTION SUMMARY

3.1 **Findings.** During the underwater inspection of the 20 moorings currently operated and maintained by PWC Subic Bay, UCT-2 divers logged over eight hours of diving time. An analysis of the data gathered by the divers reveals the following:

- Eight of the twenty moorings meet design criteria and are satisfactory for normal fleet usage at the current mooring classification. Eight other moorings are in need of overhaul actions and should be downgraded to the next lower mooring classification prior to further fleet usage. Four of the inspected moorings do not meet minimum safety requirements and are considered sub-standard and unsuitable for further fleet use.

- A number of moorings contain buoys which are larger than required for the size, weight, and scope of chain in use. Due to this fact, these buoys have excess buoyancy and three are floating on their sides with portions of their top surface submerged. This causes accelerated deterioration of the topside of the buoy and top chain jewelry.

- One mooring (FM-6) was found to be missing one of its three ground legs. The riser of FM-10 contains a detachable link which is missing its center section and connecting pin. In another mooring (FM-38), the riser chain is shackled to a concrete sinker which has two ground legs attached to its hairpin.

- Five of the moorings do not contain a swivel in their riser chains.

- Three of the fiberglass covered buoys are in need of repair with sections of the fiberglass coating peeling off, missing, or deteriorated.

- The buoys in FM-16 and FM-32 have lists of 15°-35°, which may indicate that the buoy contains water due to damage and subsequent seepage. Three other buoys were reported to have very slight lists.

- Two buoys have severe fender damage with some sections of the fenders missing.

- The ground legs of seven of the twenty moorings inspected were completely buried in the mud bottom and inaccessible for inspection.

- None of the twenty moorings contained cathodic protection systems.

A summary of each mooring's condition is contained, in tabular form, on pages 10 through 12. Additional, more detailed information concerning each of the PWC Subic mooring systems is contained in Annex A.

4.0 RECOMMENDED MAINTENANCE ACTIONS

As a result of the analysis of the data gathered during the inspection, the following comments and recommendations are pertinent:

- The four moorings found to be in unsatisfactory condition and the eight others which must be downgraded in classification should be scheduled for overhaul at the earliest practical date.
- Oversized buoys should be replaced with buoys designed for use with the specific class of mooring in use.
- All riser type mooring systems should contain a swivel in the riser chain.
- In view of the apparent minimal usage of a number of these moorings (FMs 2/11/25/26 and 31), a review of the requirement for these moorings is recommended.

SUBIC BAY INSPECTION SUMMARY

Description				Condition[3]			Evaluation
Mooring #	Class	Type[1]	Buoy[2] Type	Buoy and Topside Jewelry	Bottom Jewelry and Riser	Ground Ring and Anchor Legs	
2	A	R	P	–Light rust on steel decking over fiberglass –1" - 2" marine growth on buoy	–Heavy marine growth near ground ring	–Leg C >80% –45' - 150' of ground legs visible; no anchors located	Downgrade
6	B	R	P	–Buoy is floating on its side; 2' of buoy topside is submerged		–Leg C missing –Legs A and B buried 50' from ground ring –No anchors located	Remove from service until overhaul
10	D	R	D	–Buoy is floating on its side; topside partially submerged –Topside rail rusted away –Fiberglass peeling in sheets on buoy bottom	–Detachable link missing center section –No swivel in riser	–All legs buried 30' - 40' from ground ring –No anchors located	Remove from service until overhaul
11	D	R	D	–10' of buoy fender is damaged –Topside jewelry >80%	–Riser >80% –1" - 2" marine growth on riser –No swivel in riser	–1/2 of ground ring is buried –All legs buried; no anchors located	Downgrade
16	D	R	P	–Buoy has 15-20° list –Light rust on topside –Part of rubbing rail is missing	–Riser >80% –Heavy marine growth except in wear zone	–All legs buried; no anchors located	Downgrade
17	D	R	P	–Buoy is listing slightly	–No swivel in riser –Heavy marine growth	–Ground ring buried –All legs buried; no anchors located	Satisfactory
19	B	T	T	–Buoy is listing slightly –Some deterioration of fiberglass from the top of the buoy down to about 12" on side		–All legs buried at 5-75' from ground ring –No anchors located	Satisfactory

SUBIC BAY INSPECTION SUMMARY (Continued)

Description				Condition[3]			Evaluation
Mooring #	Class	Type[1]	Buoy[2] Type	Buoy and Topside Jewelry	Bottom Jewelry and Riser	Ground Ring and Anchor Legs	
21	D	R	D	–Buoy is listing slightly –Missing 1/2 of steel cover plate –Light rust	–2" marine growth –Riser is >80%	–All legs buried; no anchors located	Downgrade
25	B	T	T		–Heavy growth to 60'	–Anchors not located	Satisfactory
26	D	R	D	–Buoy fenders are in poor shape	–Riser is >80%	–Ground ring resting on bottom; legs buried 45-180' from ring –"A" leg >80% – No anchors located	Downgrade
28	D	R	P			–Heavy marine growth, coral and barnacles –All three legs have shiny links in wear zone	Satisfactory
30	A	R	D	–Freeboard 8" - 12" –Tension bar, not hawse pipe		–Leg B >80%	Downgrade
31	D	R	P	–Topside decking is loose and rusted		–No anchors located	Satisfactory
32	D	R	P	–Buoy has 35° list	–No swivel in riser –Riser is >80% –Coral growth	–All legs buried; no anchors located	Downgrade
33	D	R	P		–Heavy marine growth	–Legs buried 3' from ring –No anchors located	Satisfactory
34	D	R	P	–Buoy is floating on its side; topside partially submerged		–Clean and worn links in leg B near bottom	Satisfactory

SUBIC BAY INSPECTION SUMMARY (Continued)

Description				Condition[3]			Evaluation
Mooring #	Class	Type[1]	Buoy[2] Type	Buoy and Topside Jewelry	Bottom Jewelry and Riser	Ground Ring and Anchor Legs	
37	D	R	P		–Riser is <80%	–Ground ring and all legs buried	Remove from service until overhaul
38	D	R	P	–Light rusting –Rubbing rail worn, four-foot section missing	–No swivel in riser –Riser is >80% –Clean links in tidal zone	–Only two legs –No ground ring, riser attaches to hairpin in clump	Remove from service until overhaul
39	D	R	D		–2" - 3" marine growth	–Ground ring 1/2 buried –All legs buried	Satisfactory
40	D	R	P	–Fiberglass slightly deteriorated		–Leg B >80%	Downgrade

NOTES: 1: Type: R = Riser, T = Telephone
2: Buoy Type: P = Peg Top, D = Drum, T = Telephone
3: Unless otherwise indicated, measurements are >90%

ANNEX A

MOORING INSPECTION DATA

MOORING 2

Buoy

The buoy is steel and has been fiberglassed over. A steel plate covers the topside of the buoy. This steel plate has light rusting. The top rubber fender is in satisfactory condition. Divers report a 1 to 2 inch layer of marine growth on bottom side of buoy. Overall, the buoy is in good condition.

Riser

The bottom jewelry showed no signs of wear. The swivel has heavy marine growth on it. The ground ring is at a depth of 50 feet and contains heavy marine growth.

Ground Leg A

Leg A reaches bottom at 80 feet and is buried 45 feet after the ground ring.

Ground Leg B

Leg B is buried 80 feet after the ground ring.

Ground Leg C

Leg C is buried 150 feet past the ground ring.

Recommended Action

A downgrade in classification to Class B is recommended.

MOORING NO.: 2 CLASS: A LOCATION: SUBIC LAT: 14° 48' 03.8" LONG: 120° 16' 06.3"

WATER DEPTH: 78/80 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: NI, 20K BUOY TYPE: PEG TOP

DATE: 6/10/82 DIVER: Revelle/Richardson BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 4 FT – 40 FT

COMPONENTS		NI	CONDITION							U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓								Water depth reported at 44 FT
RISER	NEAR BUOY	VIS										Hardware ok., steel decking over fiberglass LT/RUST
	MIDDLE			2 3/4								1-2" growth on bottom of buoy
	NEAR GRD RG			2 3/4								Heavy marine growth
GROUND RING				6"			✓					
GROUND LEG NO. A	UPPER END			2 3/4								Contacts botton at 80 FT runs
	WEARPOINT			2 3/4								1/2 shot & buries at 81 FT
GROUND LEG NO. B	UPPER END			✓			✓					
	WEARPOINT			✓			✓					Buried 80 F after G/ring
GROUND LEG NO. C	UPPER END				✓							
	WEARPOINT				✓							Buried 150 after G/ring

D = destroyed; broken, or missing

NI = not inspected, inaccessible

VIS : VISUAL

MOORING 6

Buoy

A barge was tied up to the buoy. The buoy is tilted so that 2 feet of the topside is underwater. Top deck plate and rubbing rail are covered with light to moderate rust.

Riser

The riser is in satisfactory condition.

Ground Leg A and B

Both legs are buried at 50 feet.

Ground Leg C

Leg C is missing.

Recommended Action

Removal from service is recommended until an overhaul takes place.

MOORING NO.: 6 CLASS: B LOCATION: SUBIC LAT: 14° 49' 24.3" LONG: 120° 17' 19.8"

WATER DEPTH: 25 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: NI, 15K BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: Meserve/Cicone BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 1 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE		✓										Buoy is utilized by UDT Barge & SM boats. Apx. 2 FT of the topside of buoy is underwater. Topside plate + rails
RISER	NEAR BUOY						✓					
	MIDDLE						✓					
	NEAR GRD RG						✓					
GROUND RING				4"								Under tension, looks good
GROUND LEG NO. A	UPPER END			✓								Buried 50 FT from G/ring
	WEARPOINT			✓								
GROUND LEG NO. B	UPPER END			✓								
	WEARPOINT			✓								Buried 50ft from G/ring
GROUND LEG NO. C	UPPER END									✓		No leg C
	WEARPOINT									✓		

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 10

Buoy

This drum type buoy is in poor condition. Part of the fiberglass layer on the buoy bottom has peeled off and hangs around the riser chain. The buoy is floating on its side with the topside partially submerged. The steel rubbing rail is badly rusted and partially missing.

Riser

The center section of the detach link connecting the riser chain to the ground ring is missing. Divers reported no swivel in the riser chain. The ground ring is buried in the mud at 25 feet.

Ground Legs A, B, and C

These legs are buried 30'-40' from ground ring.

Recommended Action

Removal from service is recommended until an overhaul takes place.

MOORING NO.: 10 CLASS: D LOCATION: SUBIC LAT: 14° 49'26.5" LONG: 120° 17'14.5"

WATER DEPTH: 25 FT TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE NI, 13K BUOY TYPE: DRUM

DATE: 6/14/82 DIVER: MESERVE/CICONE BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Engineer-in Charge (EIC): McLaughlin VIS: 1 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE		✓										Fiberglass coming off in sheets on bottom Topside of buoy partially submerged 12'x 8" DEEP
RISER	NEAR BUOY	✓										Topside rail rusted away
	MIDDLE			✓								No Swivel
	NEAR GRD RG			✓						✓		Detach is missing centersection where the riser attaches to the G/ring (critical)
GROUND RING		VIS										
GROUND LEG NO. A	UPPER END			✓								
	WEARPOINT			✓								Legs bury after 30-40 FT.
GROUND LEG NO. B	UPPER END			✓								
	WEARPOINT			✓								
GROUND LEG NO. C	UPPER END			✓								
	WEARPOINT			✓								

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 11

Buoy

Divers reported medium to heavy rusting and pitting on sides of buoy. The top fender has a 10 foot section damaged. The buoy topside is in satisfactory condition with the topside jewelry between 80 and 90 percent of original wire diameter.

Riser

The riser has 1-2 inches of marine growth on it and was measured at greater than 80 percent. Divers report no swivel on the riser and the ground ring is half buried in the mud.

Ground Legs A, B, and C

These legs are buried in mud.

Recommended Action

A downgrade of the mooring to an E Class is recommended.

MOORING NO.: 11 CLASS: D LOCATION: SUBIC LAT: 14° 46' 41.5" LONG: 120° 15' 38.7"

WATER DEPTH: 118 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE NI 13K BUOY TYPE: DRUM

DATE: 6/10/82 DIVER: Nelson BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 40 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE					✓							Fender on buoy damaged - 10 FT
RISER	NEAR BUOY				✓		✓					First 3 links +80%
	MIDDLE			✓			✓					1-2" growth on riser
	NEAR GRD RG			✓			✓					+80 link at 35 FT (1 pit on 1 link)
GROUND RING				4 1/16								No Swivel in Riser
GROUND LEG NO. A	UPPER END	✓										½ of ground ring buried
	WEARPOINT	✓										Legs buried
GROUND LEG NO. B	UPPER END	✓										After 35 FT marine growth
	WEARPOINT	✓										drops to ½"
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 16

Buoy

The buoy has a 15-20 degree list with approximately 8 inches of the topside in the water. Light rust has formed on the top surface. Part of the rubbing rail is missing. This buoy is in poor condition.

Riser

Divers report heavy marine growth on the riser which is between 80 and 90 percent of original wire diameter. There is no marine growth in the wear zone. The ground ring is buried in the mud.

Ground Leg A, B, and C

These legs are buried in mud.

Recommended Action

A downgrade of the mooring to an E Class is recommended.

MOORING NO.: 16 CLASS: D LOCATION: SUBIC LAT: 14° 49' 26.1" LONG: 120° 12' 12.7"

WATER DEPTH: 25 FT TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE NT 13K BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: MESERVE/CICONE BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Engineer-in-Charge (EIC): McLaughlin

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			Buoy has 15-20° list.
BUOY-TOP HARDWARE				✓								Topside light rust
RISER	NEAR BUOY						✓					Heavy growth except for tidal zone
	MIDDLE							✓				@ 20 FT
	NEAR GRD RG						✓					
GROUND RING				4"								Legs are buried
GROUND LEG NO. A	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 17

Buoy

The buoy has been fiberglassed and has a 3-5 degree list. Buoy condition is fair.

Riser

The riser does not contain a swivel and has heavy marine growth. The riser enters the mud at 25 feet. The ground ring is buried.

Ground Legs A, B, and C

These legs are buried in mud.

Recommended Action

None. The mooring appears satisfactory for continued use.

MOORING NO.: 17 CLASS: D LOCATION: SUBIC LAT: 14° 49' 24.3" LONG: 120° 17' 11.3"

WATER DEPTH: 25 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE NT, 13K BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: MESERVE/CICONE BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 1 FT

COMPONENTS		NI	CONDITION							U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-		
											Slight list to buoy
BUOY TOP HARDWARE				✓							No swivel
RISER	NEAR BUOY			✓							Heavy growth
	MIDDLE			✓							
	NEAR GRD RG			✓							
GROUND RING		✓									G/ring buried at 25 FT
GROUND LEG NO. A	UPPER END	✓									
	WEARPOINT	✓									
GROUND LEG NO. B	UPPER END	✓									
	WEARPOINT	✓									
GROUND LEG NO. C	UPPER END	✓									
	WEARPOINT	✓									

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 19

Buoy

The top 12 inches of fiberglass around the buoy sides has deteriorated. The fender is in satisfactory condition. A 2 inch layer of marine growth was reported on the bottom of the buoy. Despite a slight list, the buoy is in good condition.

Riser

The riser is in satisfactory condition with chain measurements greater than 90 percent. The ground ring is in satisfactory condition.

Ground Legs A, B, and C

Buried in the mud 5-6 feet from ground ring.

Recommended Action

None. The mooring is in satisfactory condition for continued use.

MOORING NO.: 19 CLASS: B LOCATION: SUBIC LAT: 14° 48' 31.5" LONG: 120° 17' 03.7"

WATER DEPTH: 78 FT TYPE MOORING: ☐ RISER ☒ TELEPHONE ANCHOR SIZE/TYPE NT, 13K BUOY TYPE: TELE.

DATE: 6/15/82 DIVER: JOHNSON/LITTLE BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 10 FT

COMPONENTS		NI	CONDITION							U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
				90+	80+	80-	90+	80+	80-		
BUOY TOP HARDWARE				✓							Buoy was laying over, 5" difference in freeboard Deterioration of fiberglass
RISER	NEAR BUOY			✓			✓				top of buoy down 12" 15 FT
	MIDDLE			✓			✓				35 FT
	NEAR GRD RG			✓			✓				
GROUND RING		VIS									
GROUND LEG NO. A	UPPER END			✓			✓				Runs 4 links after 6/ring + buries
	WEARPOINT			✓			✓				Some less bury, 75 FT W/D
GROUND LEG NO. B	UPPER END			✓			✓				Runs 5 FT after 6/ring
	WEARPOINT			✓			✓				
GROUND LEG NO. C	UPPER END			✓			✓				15 FT
	WEARPOINT			✓			✓				40/75 FT

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 21

Buoy

The buoy is fiberglassed. About half of the steel plate covering the buoy topside is missing. The remaining plate is covered with light rust. A 2-3 inch layer of marine growth covers the bottom of the buoy. A slight list of the buoy was noticeable.

Riser

The riser has a 2 inch covering of marine growth. Chain measured between 80 and 90 percent of original wire diameter. The ground ring is at a depth of 85 feet and is in satisfactory condition.

Ground Legs A, B, and C

The legs are buried in the mud at 87 feet.

Recommended Action

A downgrade of the mooring to an E Class is recommended.

MOORING NO.: 21 CLASS: D LOCATION: SUBIC LAT: 14° 48' 20.3" LONG: 120° E 29.7"

WATER DEPTH: 87 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: NLBK BUOY TYPE: DRUM

DATE: 6/15/82 DIVER: DAUPHINAS/REVELL BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE				✓								Topside steel plate ½ missing, LT rust Buoy listing 6", 3" of marine growth
RISER	NEAR BUOY			✓				✓				
	MIDDLE				✓		✓					Swivel at 80 FT NO ACTION
	NEAR GRD RG			✓				✓				2" marine growth
GROUND RING				3 5/8								6/ring at 85 FT
GROUND LEG NO. A	UPPER END	✓										Legs buried at 87 FT
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 25

Buoy

The buoy is in satisfactory condition. Light to moderate rust on approximately 50% of the topside deck was noted.

Riser

The riser is in satisfactory condition with chain measurements greater than 90 percent. Divers noted heavy marine growth down to a depth of 60 feet.

Ground Legs A and B

These two legs are buried in the mud at 95 feet.

Ground Leg C

This leg has heavy marine growth of 5 inches reported. The leg reaches bottom at 98 feet and then is buried in the mud 45 feet further along the leg.

Recommended Action

None. This mooring appears satisfactory for continued use.

MOORING NO: 25 CLASS: B LOCATION: SUBIC LAT: 14° 48' 32.7" LONG: 120° 16' 20.0"

WATER DEPTH: 97 FT TYPE MOORING: ☐ RISER ☒ TELEPHONE ANCHOR SIZE/TYPE: NT, 20K BUOY TYPE: TELE

DATE: 6/19/82 DIVER: JOHNSON/REVELL BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Engineer in Charge (EIC): McLaughlin

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE												
RISER	NEAR BUOY			✓								
	MIDDLE			✓			✓					Heavy growth to 60 FT then drops to ½
	NEAR GRD RG			✓			✓					
GROUND RING		VIS										OK
GROUND LEG NO. A	UPPER END			✓			✓					
	WEARPOINT			✓			✓					
GROUND LEG NO. B	UPPER END			✓			✓					
	WEARPOINT			✓			✓					
GROUND LEG NO. C	UPPER END			✓			✓					
	WEARPOINT			✓			✓					

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 26

Buoy

The buoy is in poor condition. The top fender is missing a section and the bottom fender is damaged. The buoy top jewelry is rusted and pitted. The buoy sides are deteriorated and in need of sanding and recoating.

Riser

Riser chain was measured to be between 80 and 90 percent. The ground ring was found to be in satisfactory condition at a depth of 60 feet.

Ground Leg A

Ground Leg A was measured to be between 80 and 90 percent. It runs along the bottom for 60 yards after the ground ring and then buries in the mud at a water depth of 75 feet.

Ground Leg B

Ground Leg B reaches bottom at 75 feet and is buried after a half shot of chain.

Ground Leg C

Ground Leg C runs from ground ring under a coralhead then doubles back 20 feet to where it is buried.

Recommended Action

A downgrade of the mooring to an E Class is recommended.

MOORING NO.: 26 CLASS: D LOCATION: SUBIC LAT: 14° 46' 31.0" LONG: 120° 15' 38.7"

WATER DEPTH: 60/75 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: NT, 15K W/STAB BUOY TYPE: DRUM

DATE: 6/10/82 DIVER: MESERVE/CICONE BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer in-Charge (EIC): McLaughlin VIS: 20/30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓								Fenders are in poor shape
RISER	NEAR BUOY							✓				
	MIDDLE							✓				
	NEAR GRD RG							✓				
GROUND RING				✓								6/ring on bottom 60 FT
GROUND LEG NO. A	UPPER END						✓					Northern most leg 60 W/D
	WEARPOINT				✓							Leg runs 60 yards from 6/ring + buries
GROUND LEG NO. B	UPPER END			✓								Leg buried at 25 FT after ½ 75 FT W/D shot
	WEARPOINT			✓								
GROUND LEG NO. C	UPPER END			✓								Leg apx 65 FT, under cora/head
	WEARPOINT			✓								doubles back runs 20 FT + buries

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 28

Buoy

The buoy, fenders, and hardware are in satisfactory condition. Light to moderate rust exists on the top and side.

Riser

The riser was reported to have heavy marine growth, about 2 inches thick. The marine growth consists of both hard and soft growth (coral and barnacles). The swivel is at a water depth of 45 feet and the ground ring at a depth of 53 feet.

Ground Legs A, B, and C

All three of the legs are buried 7 feet below the ground ring. The five feet of chain immediately above the bottom have been worn shiny from abrasion with the bottom.

Recommended Action

None. This mooring is in satisfactory condition for continued use.

MOORING NO.: 28 CLASS: D LOCATION: SUBIC, RP LAT: 14° 48' 01.5" LONG: 120° 17' 09.2"

WATER DEPTH: 60 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 15K W/STAB BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: NELSON/DAUTNINAS BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in Charge (EIC): McLaughlin

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE				✓								Fender ok., Hardware as reported
RISER	NEAR BUOY			✓			✓					
	MIDDLE			✓			✓					
	NEAR GRD RG			✓			✓					
GROUND RING				✓								
GROUND LEG NO. A	UPPER END			✓			✓					270° G/ring at 53 FT
	WEARPOINT			✓			✓					Heavy marine growth
GROUND LEG NO. B	UPPER END			✓			✓					hard + soft coral, barnacles
	WEARPOINT			✓			✓					Wear zone at 55-60 FT.
GROUND LEG NO. C	UPPER END			✓			✓					All 3 legs have shiny links
	WEARPOINT			✓			✓					in this area.

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 30

Buoy

The buoy, its fenders, and all respective buoy hardware are in fair condition. Some rust and corrosion are evident. The buoy has only an 8 to 12 inch freeboard. This is a tension bar type buoy.

Riser

The swivel is at a water depth of 20 feet and is in satisfactory condition. The riser and swivel are covered with soft marine growth measuring 3/4 inch thick. The ground ring is at a depth of 40 feet.

Ground Legs A, B, and C

On all three legs some wear was reported on the first chain link after the detachable link below the ground ring. It was also reported that light rust and small pits were observed when divers scraped links in order to make measurements. Leg B measured between 80 and 90 percent, while legs A and C both measured greater than 90 percent.

Recommended Action

A downgrade to a class B mooring is recommended.

MOORING NO.: 30 CLASS: A LOCATION: SUBIC, RP LAT: 14° 48' 04.2" LONG: 120° 16' 12.5"

WATER DEPTH: 82 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 15k W/STAB BUOY TYPE: DRUM

DATE: 6/14/82 DIVER: HUNT/MILLER BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			Freeboard 8-12":
BUOY-TOP HARDWARE				✓								Tension bar not hawse pipe
RISER	NEAR BUOY			✓			✓					Swivel ok DL 6 3/4"
	MIDDLE			✓								3/4" marine growth on riser
	NEAR GRD RG			✓								
GROUND RING				✓								6/ring at 40 FT
GROUND LEG NO. A	UPPER END			✓								Direction .030°
	WEARPOINT			✓								Getting rust when cleaning, chain, SM pits
GROUND LEG NO. B	UPPER END				✓							First link after detach is +80% SL 6/ring
	WEARPOINT			✓								160°
GROUND LEG NO. C	UPPER END			✓								260°
	WEARPOINT			✓								

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 31

Buoy

The top buoy steel plate is rusted and loose. The topside hardware was reported as non-standard. Heavy marine growth (2 inches thick) was observed on the underside of the buoy. Overall, the buoy is in fair condition.

Riser

Marine growth about 2 inches thick was observed continuously from the bottom of the buoy to the ground ring.

Ground Legs A, B, and C

All the ground legs are buried in mud at a depth of 61 feet. However, visible portions of all three legs were measured to be greater than 90 percent of original wire diameter.

Recommended Action

None. This mooring is in satisfactory condition for continued use.

MOORING NO.: 31 CLASS: D LOCATION: SUBIC, RP LAT: 14° 48' 06.2" LONG: 120° 17' 11.0"

WATER DEPTH: 65 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 14.5K W/STNB BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: JOHNSON/REVELL BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓								Depth reported as 48 FT Top of buoy plate is rusted + loose Topside hardware different than reported
RISER	NEAR BUOY			✓			✓					
	MIDDLE			✓								Swivel at 40 FT ok
	NEAR GRD RG			✓								Heavy growth - 2"
GROUND RING				✓								G/ring at 50 FT
GROUND LEG NO. A	UPPER END			✓			✓					DIRECTION 350°
	WEARPOINT			✓			✓					
GROUND LEG NO. B	UPPER END			✓			✓					150°
	WEARPOINT			✓			✓					Buried in mud at 61 FT
GROUND LEG NO. C	UPPER END			✓			✓					
	WEARPOINT			✓			✓					Buried in mud at 61 FT

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 32

Buoy

This buoy is fiberglassed over. A 1/2 inch of soft and hard marine growth was observed by divers on the buoy bottom. A 5 degree list of the buoy was reported. This buoy is in relatively good condition.

Riser

The riser is without a swivel and its chain was measured to be between 80 and 90 percent. The ground ring was reported to be buried in mud at 104 feet.

Ground Legs A, B, and C

All ground legs are buried beneath ground ring.

Recommended Action

A downgrade to a Class E mooring is recommended.

MOORING NO.: 32 CLASS: D LOCATION: SUBIC, RP LAT: 14° 46' 51.6" LONG: 120° 16' 08.4"

WATER DEPTH: 120 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 15K W/STAB BUOY TYPE: PEG TOP

DATE: 6/10/92 DIVER: NELSON/MILLER BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: +30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓								Buoy has 35° list
RISER	NEAR BUOY							✓				+80 link at 10 FT below buoy
	MIDDLE						✓					Soft & hard coral growth
	NEAR GRD RG			✓								No Swivel
GROUND RING												CPS just above G/ring which is buried at 104 FT
GROUND LEG NO. A	UPPER END	✓										ALL Ground legs buried
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 33

Buoy

The buoy is in satisfactory condition and has been fiberglassed over. The fiberglass coating, rubber fenders, and top rail are all in satisfactory condition. There is 1 inch of marine growth on the bottom of the buoy. Rust spots show through fiberglass on the sides of the buoy.

Riser

There is heavy marine growth (4") on the bottom jewelry extending to the riser swivel. The swivel is at a depth of 40 feet and is in satisfactory condition. The ground ring is in satisfactory condition and is at a depth of 48 feet.

Ground Legs A, B, and C

All three ground legs are buried three feet below the ground ring.

Recommended Action

None. The mooring is in satisfactory condition for continued use.

MOORING NO.: 33 CLASS: D LOCATION: SUBIC, PP LAT: 14°47'51.3" LONG: 120°12'06.3"

WATER DEPTH: 58 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 13 KW/STAB BUOY TYPE: PEG TOP

DATE: 6/14/82 DIVER: HUNT/MILLER BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 30 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓			✓					Water depth 50 FT, actually 58 FT
RISER	NEAR BUOY			✓			✓					Two wires attached & hangs
	MIDDLE			✓			✓					over side of buoy
	NEAR GRD RG			✓			✓					Heavy growth
GROUND RING				✓								6/ring at 48 FT
GROUND LEG NO. A	UPPER END			✓								Buried 3 FT after 6/ring
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END			✓								
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END			✓								
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 34

Buoy

The buoy is floating with part of the bottom out of water and 6 inches of topside submerged. The buoy's condition is fair.

Riser

Soft marine growth extends along the riser and is up to 4 inches thick. Ground ring is two feet off the bottom at a depth of 55 feet.

Ground Legs A, B, and C

All three of the ground legs are buried two feet below the ground ring. Chain links on the bottom are worn clean from abrasion with the bottom.

Recommended Action

None. The mooring is in satisfactory condition for continued use.

MOORING NO.: 34 CLASS: D LOCATION: SUBIC, PP LAT: 14° 48' 02.4" LONG: 120° 17' 28.4"

WATER DEPTH: 57 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 13K W/STUD BUOY TYPE: PE6 TOP

DATE: 6/15/82 DIVER: NELSON/RICHARDSON BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 20 FT

COMPONENTS		NI	CONDITION							U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-		
BUOY-TOP HARDWARE											6" atop of buoy under water
RISER	NEAR BUOY			✓			✓				
	MIDDLE			✓			✓				Swivel at 42 FT, 4" top + bottom
	NEAR GRD RG			✓			✓				
GROUND RING											6/ring at 55 FT
GROUND LEG NO. A	UPPER END			✓							180° Chain buried at 57 FT
	WEARPOINT	✓									
GROUND LEG NO. B	UPPER END			✓							Clean + worn links on bottom
	WEARPOINT	✓									
GROUND LEG NO. C	UPPER END			✓							90°
	WEARPOINT	✓									

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 37

Buoy

Topside hardware is worn to less than 90 percent. Otherwise, the buoy condition is satisfactory.

Riser

Chain was measured to be worn to less than 80 percent of original wire diameter and should be replaced before this mooring is used again. The ground ring is buried.

Ground Legs A, B, and C

All three ground legs are completely buried in bottom.

Recommended Action

Removal from service is recommended until an overhaul takes place.

MOORING NO.: 37 CLASS: D LOCATION: SUBIC, RP LAT: 14° 49' 27.2" LONG: 120° 12' 17.9"

WATER DEPTH: 25 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 15 K BUOY TYPE: Peg Top

DATE: 6/15/82 DIVER: MESERVE/CICONE BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 1 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			Used by UDT small boats + YC barge
BUOY-TOP HARDWARE								✓				
RISER	NEAR BUOY							✓				
	MIDDLE							-80				
	NEAR GRD RG							-80				Wear in tidal area
GROUND RING		✓										Buried before ground ring
GROUND LEG NO. A	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 38

Buoy

This buoy is in satisfactory condition. However, the top railing is worn and a four foot section of railing is broken. Light rust exists on the buoy topside and topside hardware.

Riser

The riser is without a swivel and the ground ring is replaced with a clump and hairpin. The clump is resting on the bottom with excess chain lying on top of it.

Ground Legs A and B

Two ground legs are attached to the clump's hairpin and extend in opposite directions for 10 feet before being buried in the mud.

Ground Leg C

Leg C apparently was never installed.

Recommended Action

Removal from service is recommended until an overhaul takes place.

MOORING NO.: 38 CLASS: D LOCATION: SUBIC, RP LAT: 14° 48' 03.3" LONG: 120° 17' 26.7"

WATER DEPTH: 55 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 13 K BUOY TYPE: PEG TOP

DATE: 6/15/82 DIVER: UCT-2 BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 20 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY TOP HARDWARE				✓								Fenders ok.
RISER	NEAR BUOY			✓								No swivel
	MIDDLE			✓				✓				
	NEAR GRD RG			✓				✓				Links clean in tidal zone
GROUND RING		✓										No ground ring - two legs
GROUND LEG NO. ___	UPPER END	✓										attach to a keeping/con-
	WEARPOINT	✓										crete clump.
GROUND LEG NO. ___	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. ___	UPPER END	✓										Third ground leg not observed.
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 39

Buoy

The buoy and fenders are in satisfactory condition.

Riser

Marine growth 2-3 inches thick extends along the entire length of the riser. The ground ring is half buried at a depth of 53 feet.

Ground Legs A, B, and C

The ground legs are completely buried immediately below the ground ring.

Recommended Action

None. The mooring is in satisfactory condition for continued use.

MOORING NO.: 39 CLASS: D LOCATION: SUBIC, RP LAT: 14° 48' 11.0" LONG: 120° 12' 28.6"

WATER DEPTH: 53 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 14.5K W/stab BUOY TYPE: DRUM

DATE: 6/15/88 DIVER: DAUPHINAIS/ZEVELL BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 10 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE				✓								Buoy + Fenders ok.
RISER	NEAR BUOY			✓			✓					
	MIDDLE			✓			✓					2-3" marine growth
	NEAR GRD RG			✓			✓					
GROUND RING				✓								6/RING ½ buried at 53 FT
GROUND LEG NO. A	UPPER END	✓										ALL Legs buried below G/ring
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END	✓										
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END	✓										
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

MOORING 40

Buoy

The buoy is in satisfactory condition. However, there is slight deterioration of the fiberglass coating on the top of the buoy. The buoy also has a 2 1/2 foot dent about 4 inches deep. The rubber fenders are in satisfactory condition.

Riser

The riser was reported to be in satisfactory condition. The swivel is at a depth of 15 feet and is in satisfactory condition. The riser chain shows slight wear near the bottom. The ground ring was reported to be in satisfactory condition.

Ground Legs A, B, and C

All three ground legs are buried. However, the extreme upper end of one unspecified leg contains links which measured between 80 and 90 percent.

Recommended Action

A downgrade of the mooring to an E Class is recommended.

MOORING NO.: 40 CLASS: D LOCATION: SUBIC, RP LAT: 14° 49' 16.6" LONG: 120° 17' 31.9"

WATER DEPTH: 48/50 FT TYPE MOORING: [X] RISER [ ] TELEPHONE ANCHOR SIZE/TYPE: 14.5K W/STAB BUOY TYPE: Leg Top

DATE: 6/15/82 DIVER: JOHNSON/LITTLE BOTTOM TYPE: [ ] SAND [X] MUD [ ] CLAY [ ] CORAL [ ] ROCK

Engineer-in-Charge (EIC): McLaughlin VIS: 5 FT

COMPONENTS		NI	CONDITION								U/W VOLT READING	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D		
				90+	80+	80-	90+	80+	80-			
BUOY-TOP HARDWARE												Slight deterioration of fiberglass. Eight leaders hanging from buoy.
RISER	NEAR BUOY			✓			✓					2.5' of plate dented 9" in.
	MIDDLE			✓			✓					Swivel at 15'5"
	NEAR GRD RG			✓			✓					
GROUND RING				✓			✓					
GROUND LEG NO. A	UPPER END			✓			✓					
	WEARPOINT	✓										
GROUND LEG NO. B	UPPER END			✓			✓					
	WEARPOINT	✓										
GROUND LEG NO. C	UPPER END				✓		✓					
	WEARPOINT	✓										

D = destroyed; broken, or missing

NI = not inspected, inaccessible

ANNEX B

MOORING MATERIALS PROCUREMENT LIST

MOORING MATERIALS PROCUREMENT LIST

As noted earlier, the chain in five of the twenty moorings inspected failed to meet minimum wire diameter criteria. These moorings are considered unsafe for further operational usage and are recommended for overhaul at the earliest opportunity. These five moorings are comprised of one B Class and four D Class moorings. Assuming that the anchors and buoys are reusable, the following chain assemblies must be procured (with FY 83 funds) to be used in the overhaul of these moorings. The cost estimates provided below do not include the cost of shipment from the manufacturer to Subic Bay.

Class Mooring	Qty. Riser Assembly	Cost of Riser Assys.	Qty. Ground Leg Assy.	Cost of Leg Assys.	Total Cost
B	1	$12,123	1	$122,839	$134,962
D	4	32,057	4	347,957	380,014
				TOTAL	$514,976

NOTE: Chain assemblies include chain and required swivels, detachable links, ground rings, etc.

The material comprising each of the riser and ground leg assemblies was summarized and appears as the required materials procurement list in Table B-1.

TABLE B-1

PWC SUBIC BAY FLEET MOORING MATERIALS PROCUREMENT LIST

Item	Size (in)	Number of items
Chain (shots)	2 1/2	19
	2	76
Link, Anchor Joining	2 1/2	10
	2	40
Link, Detachable	2 1/2	23
	2	92
Ring, Ground	4 3/4	1
	4	4
Swivel, Chain	2 1/2	4
	2	16

ANNEX C

RELATED DOCUMENTATION

UNCLASSIFIED

31 02 | RR | UUUU | 1091430

FROM CHESNAVFACENGCOM, WASHINGTON DC

TO COMUSNAVPHIL SUBIC BAY RP

OICC SOWESTPAC MANILA RP

INFO: COMNAVFACENGCOM ALEXANDRIA VA

PACNAVFACENGCOM PEARL HARBOR HI

CINCPACFLT PEARL HARBOR HI

PWC SUBIC BAY RP

NATCO CLARK AB RP

UCT TWO

UNCLAS //N11000//

SUBJ: AREA CLEARANCE; REQUEST FOR

A. OPNAVINST 4650.11D

1. IAW REF (A), THE FOLLOWING INFORMATION IS SUBMITTED:

A. THEODORE P. JONES, [redacted], CIVILIAN, PII Redacted CHESNAVFACENGCOM, PASSPORT NUMBER Y1756897, ISSUED 26 JUN 1981, WASHINGTON DC, SECRET CLEARANCE.

B. ETA CLARK AB, SUBIC RP 10 JUN 1982, ETD SUBIC 10 JUL 1982

C. PURPOSE OF VISIT IS ENGINEERING SUPPORT OF UCT TWO IN-SPECTION OF FLEET MOORINGS, COLLECTION OF FLEET MOORING MAINTENANCE

DISTR

Theodore P. Jones

THEODORE P. JONES FPO-1FP (PDC)
433-3881

E. B. SPENCER, HD OC ENG & CONST PROJ OFFICE (A)

SPECIAL INSTRUCTIONS

COPY TO: FPO-1FP..FPO-1..FPO-1FP2
09..DAILY..0161

UNCLASSIFIED

DD 173/2 (REV)

02 02 RR UUUU 1091430

RECORDS AND IDENTIFICATION OF FLEET MOORING MATERIALS AT SUBIC BAY

D. NO FOREIGN CONTACTS.

E. REQUEST OICC SOWESTPAC MANILA RP PROVIDE TRANSPORTATION AND HOTEL/BOQ ACCOMMODATIONS SUPPORT.

F. N/A.

G. N/A.

H. ASD (ISA) APPROVAL NOT REQUIRED.

I. N/A.

2. AREA CLEARANCE ASSUMED UNLESS OTHERWISE ADVISED.

3. REQUEST MSG CONFIRMATION OF SUPPORT REQUESTED IN 1E.

DD 1721 (COPY)

UNCLASSIFIED

01	02		RR	UUUU			1121100

MESSAGE HANDLING INSTRUCTIONS

FROM CHESNAVFACENGCOM WASHINGTON DC

TO PWC SUBIC BAY RP

INFO: COMUSNAVPHIL SUBIC BAY RP

COMNAVFACENGCOM ALEXANDRIA VA

PACNAVFACENGCOM PEARL HARBOR HI

UCT TWO

UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTIONS; REQUEST FOR INFORMATION

A. CHESNAVFACENGCOM MSG 262044Z MAR 82

1. CHESNAVFACENGCOM IS PROVIDING ENGINEERING SUPPORT TO UCT TWO FOR DIVER INSPECTION OF THE FLEET MOORINGS IN SUBIC BAY. THIS IS PART OF NAVFAC FLEET MOORING MAINTENANCE PROGRAM.

2. CHESNAVFACENGCOM PROJECT ENGINEER PLANS SUBIC VISIT ENROUTE TO DIEGO GARCIA. ETA SUBIC 1 MAY 82 (REF A). ETA DEPENDS ON UCT TWO SCHEDULE. WILL REVISE IF NEEDED.

3. REQUEST COPY OF FOLLOWING DATA FOR PICK UP BY PROJECT ENGINEER DURING VISIT:

A. CURRENT AS-BUILT DWGS PER MOORING.

B. PAST MOORING INSPECTION REPORTS.

DISTR

THEODORE P. JONES, FPO-1FP(PDC) 433-3881 Theodore P Jones E Jones/B Spencer-FPO-1FP C33851	COPY TO: FPO-1..FPO-1FP.. FPO-1FP2..09..DAILY..0161
	UNCLASSIFIED 221926Z APR 82

DD 173/2 0087

July

FPO-1C7:db
1 July 1982

MEMORANDUM

From: Chesapeake Division, Naval Facilities Engineering Command Representative
To: Commanding Officer, Public Works Center, Subic Bay, RP

Subj: Fleet Mooring Inspection; interim report of

Encl: (1) Rough data from mooring inspection report

1. In accordance with the Naval Facilities Engineering Command (NAVFACENGCOM) Fleet Mooring Maintenance Program, the Chesapeake Division, Naval Facilities Engineering Command (CHESNAVFACENGCOM) has implemented a fleet mooring inspection of the Subic Bay facilities.

2. The inspection included a review of historical data and the compilation of an inventory of on hand mooring materials. Verification of mooring buoy locations and the diver inspection of each mooring for evaluation of structural condition were a primary requirement.

3. During the underwater inspection of buoy number 10, a serious defect was discovered. The detach link on the riser chain at a water depth of 25 feet has a missing center section. With this center missing from the detach, only the load tension of the barges and YD moored to this buoy keep it from floating away. Any surge or storm loads will disconnect the buoy from its anchor system.

4. Enclosure (1) is forwarded to support the above repairs and to assist Public Works in planning and budgeting for repairs as listed.

5. A Project Completion Report (PCR) will be forwarded to Commanding Officer, Public Works Center, Subic Bay, RP after all data has been analyzed by CHESNAVFACENGCOM.

6. Any questions or requests for data should be directed to Mr. J. E. McLaughlin at (202) 433-3881 or AUTOVON 288-3881. Mailing address is:

Commanding Officer, Chesapeake Division,
Naval Facilities Engineering Command
Bldg, 212, Washington Navy Yard
Attention: Code FPO-1C7
Washington, D. C. 20374

Very respectfully,

James E. McLaughlin

J. E. McLAUGHLIN

Copy to:
UCT TWO

Subic Bay - 20 Moorings

2 - A - Risers
1 - B - Risers
15 - D - Risers
2 - B - Telephones

9 Operational

1 - A - Riser
0 - B - Riser
6 - D - Riser
2 - B - Telephones

5 Downgrade

0 - A - Riser
0 - B - Riser
5 - D - Riser *
0 - B - Telephones

6 Overhaul/Repair* (any downgrade could be repaired on overhead)

1 - A - Riser
1 - B - Riser
4 - D - Riser
0 - B - Telephones

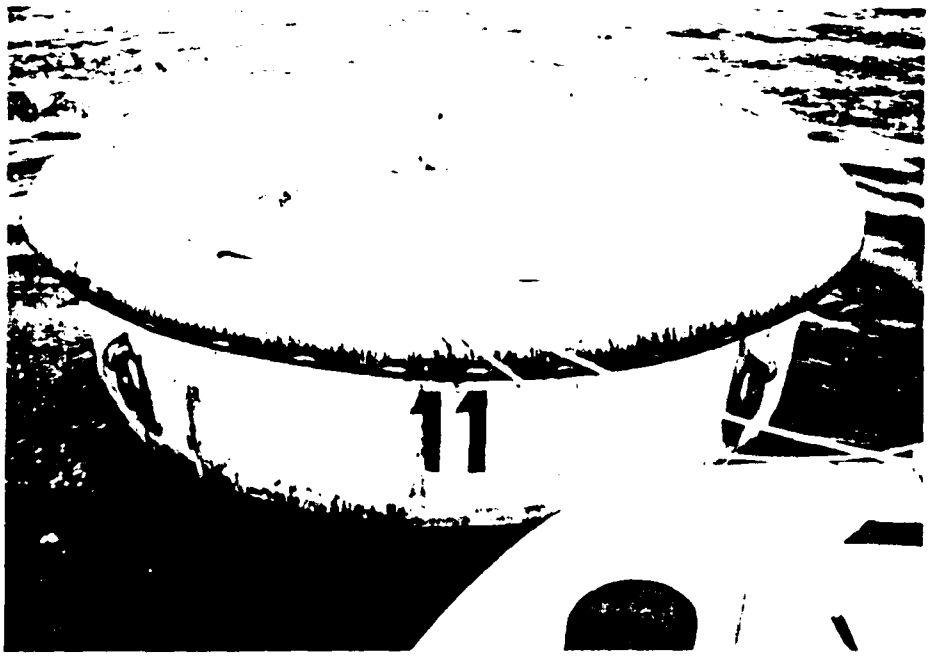
Enclosure (1)

Rough data from mooring inspection report

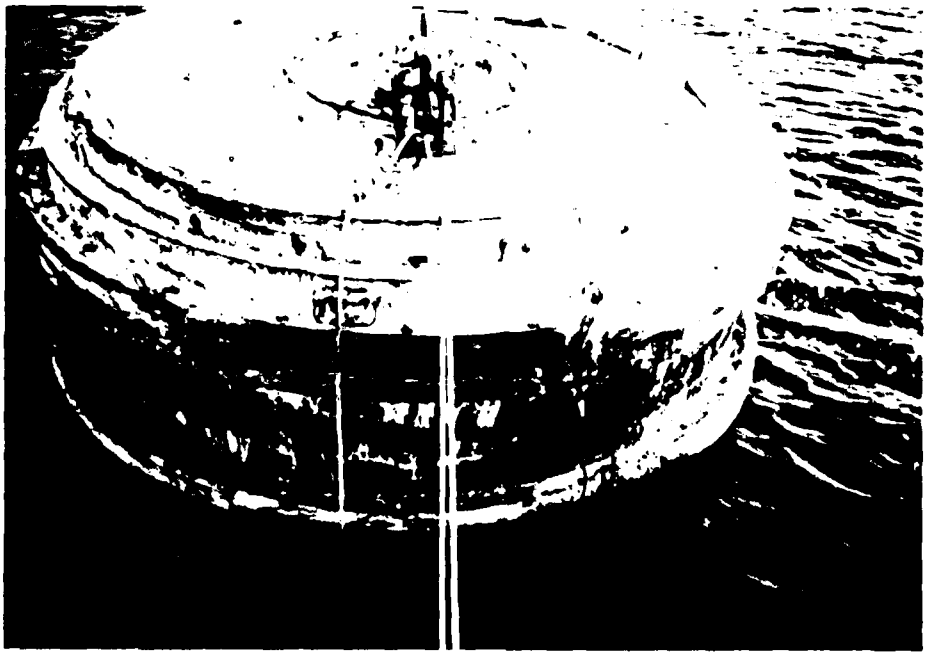
Mooring	Status	Depth	Remarks
# 2, A - Riser	Operational	82 ft	Water depth reported at 44 ft.
6, B - Riser	Unserviceable	25 ft	Mooring is missing one leg
10, D - Riser	Unserviceable	25 ft	Detach link missing center section
11, D - Riser	Unserviceable	118 ft	Chain link at 35 ft is 80%, topside repair
16, D - Riser	Downgrade	25 ft	Chain links at + 80%
17, D - Riser	Operational	25 ft	Slight list possibly due to excess buoyancy
19, B - Telep	Operational	78 ft	Top 12" of filberglass deteriorating
21, D - Riser	Downgrade	87 ft	Riser chain + 80%
25, B - Telep	Operational	97 ft	Water depth reported at 90 ft
26, D - Riser	Downgrade	75 ft	Water depth reported 84 ft, riser and legs at +80%, fenders poor
28, D - Riser	Operational	60 ft	Water depth reported at 42 ft
30, A - Riser	Unserviceable	82 ft	Buoy freeboard 8", B leg is + 80%
31, D - Riser	Operational	65 ft	Water depth 48 ft, top plate rusted and loose
32, D - Riser	Downgrade	104 ft	Water depth reported 120 ft, + 80% link 10 ft under buoy
33, D - Riser	Operational	58 ft	Water depth reported as 50 ft
34, D - Riser	Operational	57 ft	Water depth reported as 50 ft
37, D - Riser	Unserviceable	57 ft	Chain links - 80%, water depth reported 50 ft
38, D - Riser	Unserviceable	54 ft	Chain links 80%, bottom wear zone
39, D - Riser	Operational	53 ft	
40, D - Riser	Downgrade	52 ft	Links 6 ft above bottom + 80%

ANNEX D

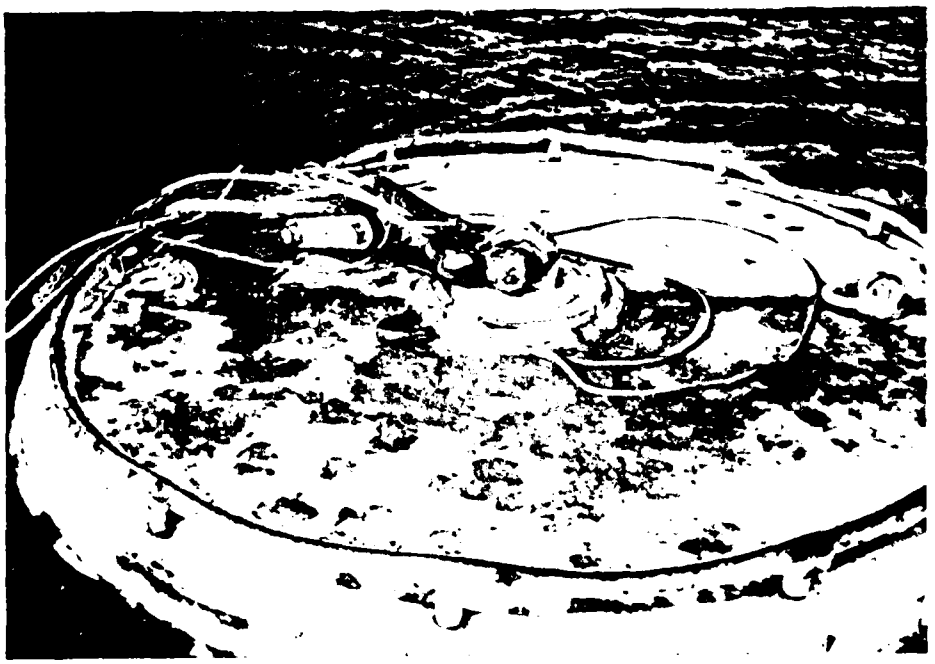
PHOTOGRAPHS



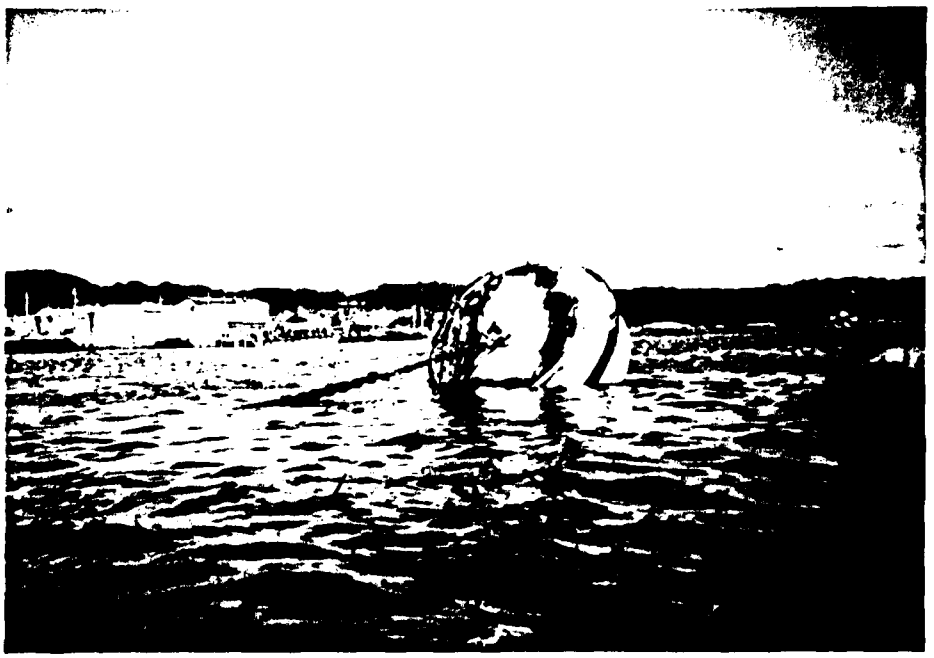
Mooring #11 – Best Topside Condition of all Subic Bay Mooring Buoys.



Mooring #26 – Showing Typical Side and Fender Damage.



Mooring #31 – Topside Steel Decking is Loose and Rusty; Damaged Railing Also Shown.



Mooring #10 – Under Load, With Topside Partially Submerged.

Mooring #30 – View Showing Swivel in Riser Chain.

Mooring #30 – Another View of Riser Chain.

Mooring #26 – View of Ground Ring and Detachable Links Which Connect Ground Legs to Riser.

Mooring #34 – Typical Marine Growth on Bottom of Buoy and Bottom Jewelry.